

Chapter Six

Municipal Services and Operations

Introduction

The Climate Action Plan encompasses the entire Fremont community as well as the municipal operations of the City of Fremont. Other chapters of the CAP address community-wide actions. This chapter includes actions for reducing greenhouse gas emissions resulting from energy and fuel use for the City's operations, including buildings, the vehicle fleet, and public infrastructure such as streetlights and traffic signals.

The CAP also identifies ways the City can support choices and behaviors by its employees that will help achieve emissions reductions.

The City of Fremont provides a wide range of services to the public which require energy and create greenhouse gas emissions: police and fire services, building inspection, development and maintenance of public infrastructure (such as roads, parks, public buildings, and street lighting), and environmental and recreation services. In Fremont, water, wastewater, trash collection and recycling, and provision of electricity and gas for buildings, street lighting, and other end uses, are the responsibility of other service providers. In addition, unlike some other cities, Fremont does not operate specialized facilities such as an airport or shipping port. This is an important distinction when comparing greenhouse gas emission inventories between jurisdictions, since each jurisdiction is unique in its operational impacts.

Greenhouse gas emissions from city government operations account for less than one percent of Fremont's total emissions. While municipal operations represent a proportionally modest opportunity for emissions reductions overall, the essential obligation for the City of Fremont to lead by example remains undiminished. Since the City has a higher degree of control and influence over the municipal activities and facilities that create greenhouse gas emissions than it does over those within the community at large, it can show leadership and commitment while monitoring and reporting progress as emission reduction initiatives are implemented.

While the primary purpose of the Climate Action Plan vis-à-vis government operations is to identify actions for reducing greenhouse gas emissions in those operations, it also provides an opportunity for the City to save money. In addition, as the organization implements the Plan and in some cases becomes an 'early adopter' of new technologies, policies, and behaviors, employees will gain practical experience with various approaches to reducing emissions. This organizational capacity-building will help the City be a more effective leader and community partner.



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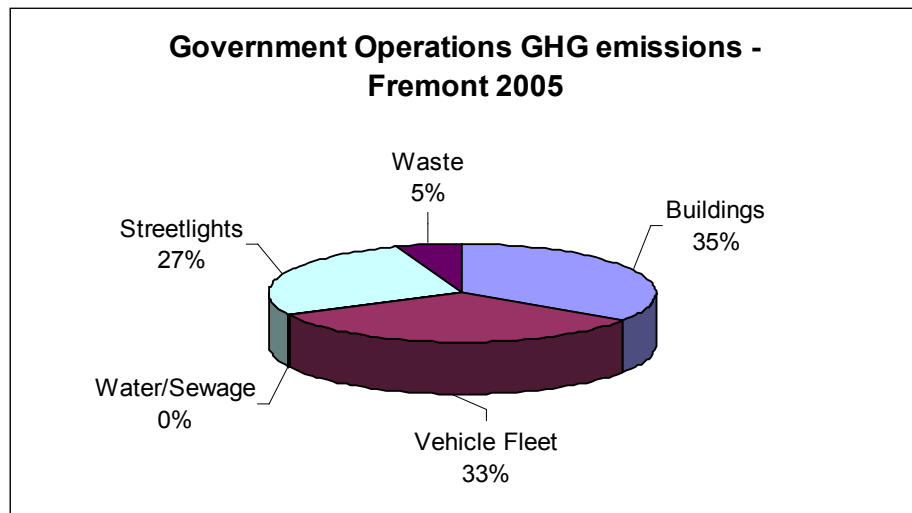
As described in Chapter One, the City has achieved reductions in greenhouse gas emissions through a variety of projects, policies and partnerships. Fremont will continue to build on these achievements, and will actively seek opportunities for funding, collaborative initiatives, and other ways to support staff's efforts to successfully implement the Plan's actions. City staff will also work to track and report on energy and financial savings resulting from energy efficiency strategies deployed in buildings, lighting systems, and other City-owned and operated resources.

2005 Baseline Inventory of Greenhouse Gas Emissions from Municipal Operations and Facilities

The 2005 baseline inventory showed that the City of Fremont organization created approximately 7,400 MTCO₂e of greenhouse gas emissions. Figure 6-1 shows the percentages of emissions from the five source categories reported in the baseline inventory.

Figure 6-1

2005 Greenhouse Gas Emissions from City Operations and Facilities



Each of these emissions source categories is discussed below. In addition, this chapter addresses other topics, such as reducing employee commute vehicle miles, which are opportunity areas for achieving reductions in greenhouse gas emissions by City staff.

Building Energy Use



LEED™ Silver-certified Fire Station #2 - Niles Boulevard

Fremont's accomplishments in energy efficiency and energy conservation in City buildings are described in detail in Chapter One. They include energy efficiency retrofits, such as lighting retrofits; installation of cool roofs; window film to reduce solar heat gain, and reduced number of computer servers for the organization. Other examples include the ice storage system that cools the Police Building and uses energy at lower-cost off-peak hours, and the 2006 policy that requires new City buildings greater than 10,000 square feet in size to attain Leadership in Energy and Environmental Design (LEED™) Silver Certification.

While energy conservation and energy efficiency are the most cost effective approaches to reducing emissions, the use of distributed, renewable energy for City facilities is another important strategy that the City is just beginning to pursue.¹ The Climate Action Plan calls for the City to explore opportunities for renewable energy systems, whose environmental gains could be augmented by the financial benefits provided for under the *Local Government Renewable Energy Self Generation Program* created by AB 2466 and modified by AB512 in 2011. As codified in Section 2830 of the Public Utilities Code, local governments can install renewable generation of up to 5 megawatts (MW) at one location within its geographic boundary and generate credits that can be used to offset charges at one or more other locations within the same geographic boundary.

¹ The solar system at the Irvington Community Center is an example of distributed renewable energy at a City facility.

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In December 2010, the City Council approved the issuance of debt financing for several projects, including the following energy efficiency projects:

- **Development Services Center:** This project includes the installation of a cool roof and replacement of the heating, venting and air conditioning (HVAC) units with new, energy-efficient equipment.
- **Wally Pond Irvington Community Center:** This project includes the installation of a cool roof, replacement of the HVAC system with new, energy-efficient equipment, and a solar system.



Wally Pond Irvington Community Center

- **Fremont Main Library:** This project includes the replacement of the HVAC system with new, energy-efficient equipment.

Each of these projects will result in reductions in greenhouse gas emissions and help the City make progress towards its emission reduction goals. They will also reduce maintenance and energy costs and help to protect the community's investment in three well-used public buildings.

Vehicle Fleet Fuel Consumption

As of early 2012, the City's fleet included 514 vehicles; of these, 52 were alternative fuel vehicles. Fleet vehicles are used for many City services, including police, fire, park and street maintenance, building inspection, and general government operations. Table 6-1 describes the 52 alternative fuel vehicles currently included in the fleet.

Table 6-1

Alternative Fuel Vehicles in the City of Fremont Fleet

- 29 hybrid vehicles
- 10 compressed natural gas vehicles
- 5 off-road electric carts (for use in the city's parks)
- 5 compressed natural gas street sweepers
- 1 compressed natural gas bus
- 1 off-road propane forklift
- 1 off-road hybrid man-lift

The City is committed to the ongoing replacement of fossil-fuel powered vehicles which have reached the end of their useful life with alternative fuel vehicles, wherever feasible. In addition to fleet vehicles, City staff use fossil fuel-powered equipment, such as mowers, edgers, and trimmers, to maintain parks, median strip landscaping, and other public lands. It is expected that new equipment powered by alternative fuel sources that can be used for large-scale maintenance operations will be developed and made available over the coming years. As this occurs, staff will aim to replace existing fossil-fuel powered equipment with new, cleaner equipment.

In 2010, Fremont became a partner agency to the *Local Government Electric Vehicle (EV) Fleet Project*, a multi-agency initiative to purchase electric vehicles for government fleets through \$2.8 million in grant funding from the Metropolitan Transportation Commission. The City will use the local fund allocation to purchase two all-electric vehicles. As part of the project, charging stations at two City buildings will be installed to provide power for the vehicles, as well as other electric vehicles that may be added to the fleet over time. The Local Government EV Fleet Project is an excellent example of the City successfully leveraging partnerships with other agencies and acting as an early adopter of a new technology. The Climate Action Plan supports the creation of a citywide system of fueling stations for the City's fleet of alternative fuel vehicles, to ensure there are no barriers to their use throughout the organization.

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Streetlights and Traffic Signals



Fremont has over 15,500 high pressure sodium (HPS) streetlights. Currently, the annual electricity cost for streetlights is around \$1 million dollars, representing about half of the City's annual utility bills. Light-emitting diode (LED) street lights provide a number of benefits compared to HPS lights, including lower energy consumption and lower greenhouse gas emissions, improved night visibility, and significantly longer lifespan and reduced maintenance costs (since they need to be replaced less frequently).

Fremont's 204 traffic signals (161 owned, operated and maintained by the City and 43 owned, operated and maintained by Caltrans) all have LED bulbs, which have resulted in both energy and maintenance savings. Replacing HPS streetlights with LEDs will achieve energy and cost savings and reduce greenhouse gas emissions.

However, replacement of the entire streetlight system is a multi-million dollar capital expense which is unlikely to be completed at one time. Fremont is taking an incremental approach to retrofitting the HPS streetlights, beginning with the retrofit of 54 street lights on Osgood Road and 254 street lights on Stevenson Boulevard. Money for these lights came from the federally-funded Energy Efficiency and Conservation Block Grant Program a one-time funding source. Also, in December 2010, the City Council approved the issuance of debt financing (2010 Variable Rate Demand Certificates of Participation) for a variety of projects including LED streetlights for approximately 5-10% of the system. Fremont will continue to seek funding for replacing the remainder of the HPS streetlights, until the system is fully retrofitted.

The City's Solid Waste

Similar to any business or household, the City of Fremont purchases and uses a wide range of products and equipment that will ultimately need to be disposed of.

Fremont's approach to managing these materials is informed by the solid waste hierarchy (described in Chapter Four) of waste prevention/source reduction—reuse—recycling/composting and, lastly, disposal.

In 2006, the City Manager approved Administrative Regulation 3.10, *Purchasing Recycled and Waste-Reducing Products*. This directive addresses policies supporting the purchase of recycled, reusable, and waste-reducing products and services, and for ensuring compliance with both state and federal regulations requiring local agencies to buy recycled products. Administration Regulation 3.10 also describes how the organization can reduce toxics and pollution by, for example, purchasing paper products that are processed without chlorine or chlorine derivatives, and replacing fossil-fuel powered fleet vehicles with less-polluting alternatives.



Wood mulch around base of tree.

Plant debris from the maintenance of parks, median landscaping, and trees is another component of Fremont's solid waste. As a result of the City's environmentally sustainable practices, **no plant debris is sent to the landfill**. Larger items such as tree limbs are cut up and used as wood chips in locations such as shrub beds, pathways, and tree wells, in order to suppress weed growth and retain moisture in the soil. This practice helps to minimize the need for watering and the use of pesticides. Smaller plant cuttings are loaded into a dumpster and hauled by Allied Waste to their Milpitas facility, where it is turned into compost.

The Environmental Services Division plays an important role in educating employees about waste prevention, recycling, composting and the most environmentally appropriate ways to dispose of whatever materials cannot be managed otherwise. The City will continue to build on its effective practices by pursuing new strategies for waste reduction and sustainable materials management.

Water

The 2005 baseline greenhouse gas inventory of water-related emissions from City operations was limited to the electricity used for water pumps and irrigation. Fremont will achieve additional emission reductions in this area through the expansion of the Calsense water management irrigation system beyond its current use in larger parks to include smaller parks. This system uses water efficiently and prevents overwatering by self-adjusting the daily watering schedule based on evapotranspiration gauge readings, ensuring plant materials are only watered when necessary.

Reducing water use in public buildings will reduce greenhouse gas emissions. As described in Chapter Five, *when you save water, you save energy, and when you save energy, you reduce greenhouse gas emissions*. The Climate Action Plan directs the completion of an assessment of water use in City-owned and operated buildings and facilities, to provide the information necessary for developing and implementing a water conservation and reduction program.

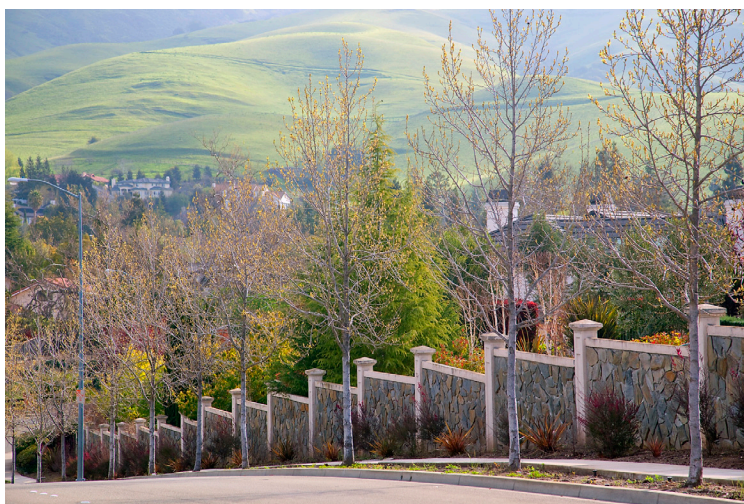
Reducing Employee Vehicle Miles Traveled

Emissions resulting from employee commuting are included in the baseline community inventory, rather than the baseline municipal inventory. Regardless of where the emissions are accounted for, Fremont can seek to reduce its workforce's commute-related vehicle miles traveled, in order to achieve emission reductions. The Climate Action Plan includes several actions to reduce barriers and incentivize options other than single-occupant vehicle use for employee commuting.

The Benefits of the City's Trees and Open Space System



The movement of carbon from one source to another plays an important role in regulating Earth's climate. The full carbon cycle – basically, the exchange of carbon, at various rates, among terrestrial (land), atmospheric, and aquatic systems – determines whether a landscape is a *carbon source* or a *carbon sink*. Carbon sources are net emitters of carbon into the atmosphere, while carbon sinks are net capturers of carbon (they remove carbon from the atmosphere). *Carbon sequestration* and *carbon storage* are other common phrases which refer to the removal of carbon from the atmosphere.



Terrestrial systems that store carbon include animals, soils, rocks, fossil fuels, and plants². As such, Fremont's undeveloped, natural open spaces and trees – both publicly and privately owned – influence Fremont's net inventory of greenhouse gas emissions in a positive way. Currently, there are over 45,000 trees in public rights-of way, 12,000 to 15,000 trees in medians and parks, and many thousands of trees on private property. In addition, thousands of acres of undeveloped open space and parkland are located within Fremont. Although an estimate of the quantitative benefit of these terrestrial systems in sequestering carbon is beyond the scope of the Climate Action Plan, the brief discussion that follows is meant to highlight the benefits that they provide.

The California Climate Change Scoping Plan identifies urban forestry as an opportunity area for greenhouse gas emission reductions. The Scoping Plan notes that, in addition to carbon sequestration through the process of photosynthesis, trees can provide shading, thereby reducing building energy usage, and can also provide biomass for fossil fuel alternatives from urban green waste.

Neither trees nor soils have unlimited capacity for carbon sequestration,

² All types of vegetation – trees, shrubs, flowers, grasses, groundcovers – store carbon in their above-ground tissue and below-ground roots, as well as in the soil which surrounds them. Sequestration rates vary by tree species, soil type, regional climate, topography and management practices. The brief discussion in this Plan focuses on trees, since they are (in most cases) the largest of the plant species and, generally, the longest-lived.

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since their carbon level will eventually reach a saturation point beyond which additional storage is no longer possible. This usually happens when trees reach maturity. After reaching the point of carbon saturation, the trees should be maintained in order to prevent losses of carbon back to the atmosphere which would result if and when the tree is cut down or lost to disease or other causes.

Any investment made in increasing and maintaining trees, and preserving undeveloped open space land, will return multiple environmental benefits, as described above.

Emission Reduction Actions and Implementation Timeline

Short-term actions: 1-3 years from Plan adoption

GOAL: Reduced energy use and greenhouse gas emissions from City operations.

Vehicle fleet

- M1 Continue replacing gasoline- and diesel-powered fleet vehicles with alternative fuel vehicles, such as hybrids, compressed natural gas, and electric vehicles.
Greenhouse gas emission reduction potential, through 2020: 260 MTCO₂e
- M2 Install charging and refueling stations at appropriate sites throughout the city to service the fleet's alternative fuel vehicles.
- M3 Educate and encourage City staff to limit idling when using fleet vehicles.

Street and Parking Lot Lighting

- M4 Replace high-pressure sodium and mercury vapor lights used on public streets and public parking lots with energy-efficient alternatives, such as light-emitting diodes (LEDs.)
Greenhouse gas emission reduction potential, through 2020: 1,400 MTCO₂e

Planning and Budgeting Processes

- M5 For the biannual Capital Improvement Program Plan, add a new criterion to the “Capital Improvement Project Prioritization Process” addressing the potential for projects (including the purchase of equipment such as vehicles for the City’s fleet) to reduce greenhouse gas emissions.
- M6 For the annual Operating Budget, add a new criterion, to be used in the evaluation and prioritization of equipment purchasing that addresses the potential for projects to reduce greenhouse gas emissions.

GOAL: Programs and policies to reduce vehicle miles traveled by employees.

- M7 During employee recruitment, advertise the City’s incentives and subsidies for choosing alternatives to single-occupant auto commuting.
- M8 Provide preferential parking and/or other benefits for carpool and alternative fuel vehicles at City facilities, to encourage and reward carpooling and ownership of alternative fuel vehicles.
- M9 Provide secure bicycle parking, showers, lockers and other amenities at City facilities to promote bicycle use by both employees and visitors.

GOAL: Increased diversion of solid waste from landfills and increased use of recycled-content products.

- M10 Increase the amount of recycling and composting at City facilities.
- M11 Increase construction and demolition debris recycled from public-sector projects.
- M12 Enhance and expand waste reduction policies and programs for City facilities, such as the environmentally preferable purchasing policy and incorporate new policies in response to innovations in materials and technologies.
- M13 Support the source-reduction policy (AR 3.10) by discouraging the purchase of water in single-use,



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disposable containers by all City departments and agencies. Encourage reductions in the purchase of other beverages sold in single-use, disposable containers.

- M14 Increase the use of recycled-content products at City facilities.

GOAL: Maximum water conservation and efficient use of water in City operations.

- M15 Enhance and expand the computer-controlled irrigation system throughout the City's park system to reduce water use by tying watering cycles to soil moisture.

- M16 Conduct a water audit of all City-owned and operated buildings and facilities and implement measures to reduce water use. Encourage meeting the LEED™ Standards Rating Systems for Existing Buildings or Commercial Interiors or other comparable sets of standards.

- M17 At the end of the units' useful life, replace least efficient water and wastewater motors and pumps in locations such as City parks with more energy-efficient units.

- M18 Continue implementing the Bay-Friendly Landscape requirements for civic improvement projects which include landscaped areas larger than 10,000 square feet.

GOAL: Increased use of renewable, distributed energy for City facilities.

- M19 Evaluate the potential for providing solar, wind, and other renewable energy systems at City facilities.

Medium-term actions: 3-5 years from Plan adoption

GOAL: Reductions in employee commuting in single-occupant vehicles.

- M20 Expand and improve existing incentives for City employees to choose alternatives to single-occupant auto commuting, such as flexible work schedules, telecommuting, transit incentives and subsidies, and ridesharing services and subsidies.

GOAL: Service contracts which advance the City's goal of achieving reductions in greenhouse gas emissions.

- M21 Evaluate the potential for setting greenhouse gas emission reduction targets and strategies for services contracted by the City, such as solid waste collection.
- M22 Include a provision in the next contract with the City's solid waste collector that the provider use alternative fuel vehicles for the fleet which services Fremont.

GOAL: Public infrastructure which helps to achieve greenhouse gas emission reductions.

- M23 Evaluate and, where appropriate, pursue the use of new greenhouse gas-reducing paving technologies for street and parking lot pavement projects. Examples include warm mix asphalt and paving with higher albedos (reflectivity) and improved rolling resistance.

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